



# **iWear® VR920 Video Eyewear**

## **User Manual**





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### **IMPORTANT NOTICE**

- 1. Read the Safety & Warranty information booklet before proceeding.**
- 2. Install the VR Manager software BEFORE connecting the VR920 to your computer.**

### **System Requirements:**

- Windows\* based desktop PC or laptop computer
- Windows\* compatible graphics card with VGA or DVI graphics port
- USB 2.0 port
- Vuzix iWear® VR920 Video Eyewear, or  
Vuzix Wrap 920 Video Eyewear with Wrap VGA Adapter and Wrap Tracker 6TC\*\*

\*32-bit or 64-bit Microsoft Windows 7, Vista or XP

\*\* Optional – required for tracking support

## Installation & Setup

The CD provided with your VR920 video eyewear includes required support software, documentation and optional Bonus Software. Portions of this software may have been updated since your CD was created so we suggest you check the Vuzix website (**[www.vuzix.com](http://www.vuzix.com)**) and download the latest version if an update is available.

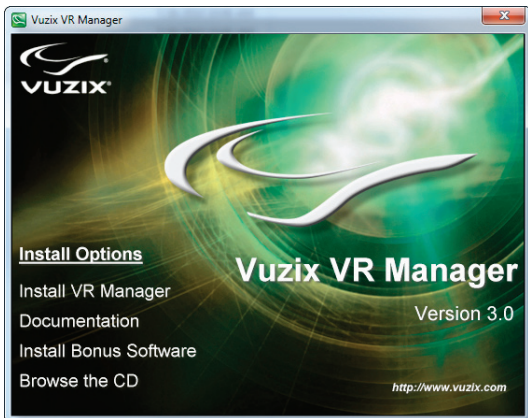
Updates are complete applications installs that do not require the prior version. It is suggested that any older version be uninstalled before a new version is installed.

**Tip:** Download and use the latest version of VR Manager, available from **[www.vuzix.com/support/downloads\\_drivers.html](http://www.vuzix.com/support/downloads_drivers.html)**

**Tip:** If you have 3<sup>rd</sup> party stereoscopic drivers installed, disable them prior to installing the Vuzix software.

### 1. Insert the software disc provided with your VR920 eyewear.

If the install screen does not automatically open when the disc is inserted, you can launch it by running the “autorun.exe” application on the disc.



2. Click “Install VR Manager” on the install screen.
3. Follow the onscreen installation instructions.

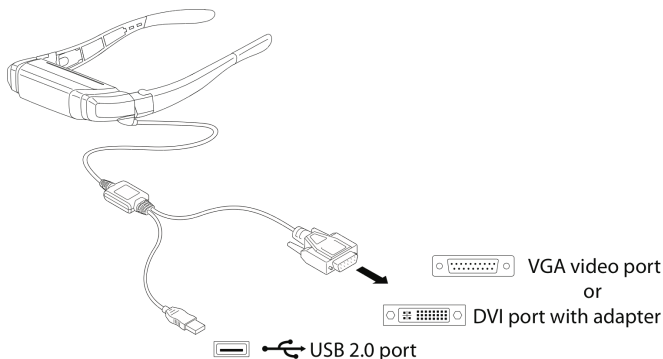
The on-screen instructions and messages will vary, based upon the version of Windows installed on your computer. Enable all actions and permissions requested by the installation program.

The VR920 video eyewear requires the latest version of DirectX, is a collection of application programming interfaces (APIs) provided by Microsoft. The installation program may request you install the latest version of DirectX, provided on the CD.

#### **4. If presented with the DirectX installer, enable its installation.**

Upon completion of the VR Manager install, you may choose to install the optional Bonus Software provided on the disc or copy the documentation to your computer.

#### **5. Connect your VR920 eyewear to your computer.**



The USB connector on the VR920 cable must be connected to a powered USB 2.0 port on your computer. Some USB connectors on hubs and keyboards may not provide sufficient power.

The VGA connector can be connected to any available VGA port on your computer or to a DVI port, using the provided VGA/DVI Adapter.

#### **6. Configure the display settings for the VR920 eyewear.**

If your graphics card came with its own Control Panel for display configuration, we suggest using that rather than the Display Control Panel provided with Windows. Consult the provider of your graphics display Control Panel for information of accessing the required configuration options.

- **Configure your display setting for dual monitors, sometimes referred to as Cloned or Duplicate displays, with the VR920 set as the Primary display.**
- **Set the display resolution to 640x480, 800x600, or 1024x768.**

A lower resolution provides more readable small text while a higher resolution is often preferred for gaming.

- **Set the monitor “Refresh rate” to 60 Hertz.**

**The following are the display set-up steps specific to Windows 7:**

1. *Open Control Panel, and then select “Appearance and Personalize”*
2. *Under Display, select “Connect to an external display”*
3. *Click the drop menu beside “Multiple displays:” and select “Duplicate these displays”*
4. *Apply the change*
5. *Select the “Adjust screen resolution” option*
6. *Choose a Resolution of 640x480, 800x600, or 1024x768*
7. *Press the “Advanced settings” option and choose the “Monitor” tab*
8. *Set a Screen Refresh rate of 60 Hertz*
9. *Click “Ok” to close the Advanced setting window and then click “Ok” again to close the Display Control Panel window*
10. *Close the main Control Panel Home window and you’re done.*

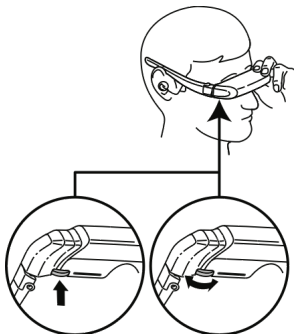
# iWear VR920 Hardware

## On Screen Display (OSD)

The VR920 contains an On Screen Display (OSD) for adjusting volume and display options. It is accessed and controlled through an OSD Control located under the right corner of the eyewear's display.

This is a multi-function control that can be pressed like a button or turned like a dial.

- When no on-screen display is shown in the eyewear, turning the OSD Control adjusts the volume.
- Press the OSD Control to access and display the OSD.
- With the OSD displayed, press the OSD Control to make selections and rotate its dial to makes adjustments of change selections.
- After adjusting a control setting, press the OSD Control again to exit that control.



*Note: The OSD automatically closes if the OSD Control is unused for more than 5 seconds.*

## OSD Menu Options

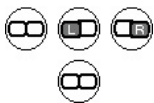
— — + **Brightness:** When the Brightness menu is selected and the OSD Control wheel is pressed, an adjustment indicator bar is displayed. Use the OSD Control wheel to adjust the display brightness and press the wheel again to exit the brightness control.



— — + **Contrast:** Selecting the Contrast menu works the same as Brightness; press the OSC Control wheel to select it, turn the wheel to adjust contrast, and then press the wheel again to exit the Contrast adjustment.







**Display Mode:** When viewing 2D applications, the Display Mode should be set to 2D Monoscopic - the sub-menu icon furthest to the left.

When using 3D Stereoscopic applications choose one of the 2D Stereoscopic display modes. Most applications use the Left eye setting, indicated by the icon with the "L". If its 3D imagery does not appear correct, select the Right eye setting.



**Brightness Balance:** Some people find that one display appears darker or lighter than the other due to differences in InterPupillary Distance (IPD). The Brightness Balance function allows you to compensate for this by rotating the wheel to adjust brightness so both displays appear equal.



**Backlighting:** This menu item allows you to adjust the amount of backlighting in the display. An increased amount of backlighting helps in bright conditions while lower backlighting provides superior quality in low light conditions.



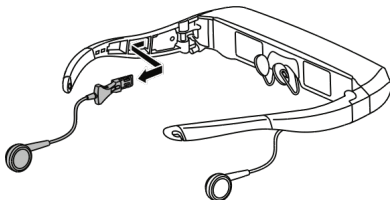
**Reset:** This command resets all of the OSD menus to their original values.



**Exit:** Press this menu item to exit the OSD or simply don't use the OSD Control wheel for 5 second and the OSD will automatically be closed.

## Audio System

The iWear VR920 contains an integrated audio system with removable earphones and a built-in microphone. When the VR920 is connected to your computer, Windows sees these as new USB audio devices and automatically enables them as your selected speakers and

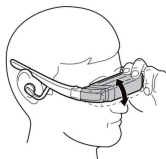


microphone. If you wish to use alternate microphone or speakers, open the Sound Control Panel and select the microphone and/or speakers of your choice.

If you choose to use alternate speakers, you can remove and reinstall the earphones by grasping the rubber section of the earphone connector and drawing it straight back. Reverse the process to re-install them.

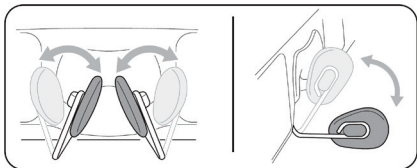
## AccuTilt®

AccuTilt is a patented display feature that enables you to tilt the display section of the VR920 up or down 15° to achieve the optimum viewing angle. Tilt the front display housing up or down to achieve the best quality picture.



## Nose Bridge

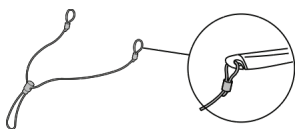
Nose bridges vary considerably from one person to the next. The adjustable nose bridge on the iWear VR920 is designed to accommodate the widest possible range of individual needs. Wire stems, similar to those found on conventional spectacles, can be bent up and down, and inward and outward, to comfortably position the eyewear for the best possible viewing angle.



**Note:** Like conventional eyeglasses, the nose bridge adjustment is designed for personal use, not repeated adjustment for multiple users. Sharp bends in the nose pad support wires or repeated bending can weaken them leading to eventual failure.

## Tether Strap

Your VR920 video eyewear contains a tether strap to help secure it. The ends of the tether strap fit into the hooks on the end of the temples.



## Care & Maintenance

Your iWear is designed to provide trouble free, low-maintenance use. There are a few things that you can do to main it in prime conditions and steps to take should you encounter difficulties.

### Cleaning

Abrasive cleaners such as glass cleaner, paper towels and facial tissues can scratch the coating on your iWear lens and the finish on the eyewear's frame. To clean the lens, fog them with your breath and use a microfiber cloth or the cloth pouch to gently wipe them clean. If you prefer to use a liquid cleaner, use only solutions designed for optical lens and apply the cleaner to a microfiber cleaning cloth, not directly onto any portion of the iWear. Spraying cleaners directly onto the iWear may result in permanent damage, not cover by the warranty.

### Powering Down Your iWear

The VR920 does not have an on/off switch and leaving it powered up will not harm it even though it may feel warm. If you feel more comfortable powering it down when it's not in use, simply unplug its USB connector then reconnect it when you choose to use it again.

# VR Compatible Applications

For applications to provide 3D stereoscopic video and/or head tracking, these capabilities must be enabled specifically for each application.

## Types of VR Support

Vuzix VR support can be enabled in two ways:

**Native Support:** Stereoscopic 3D video and/or head tracking support written directly into an application by the application's creator.

**Vuzix Extension:** Stereoscopic 3D video and/or head tracking support added to the program by a 3<sup>rd</sup> party or independent programmer. Vuzix Extensions are enabled through the VR Manager software provided with the VR920 eyewear or downloaded from the Vuzix website ([www.vuzix.com](http://www.vuzix.com)).

Ideally, Native Support is included in the original release of an application. This generally provides the best possible 3D and tracking performance and allows for configuration options to personalize your VR experience.

Native Support programs do not require Vuzix Extensions and therefore are not included in the Monitor section of the VR Manager software.

When a program does not provide Native Support, Vuzix or other 3<sup>rd</sup> party developers are often able to add 3D video and/or tracking support through a programming interface called a Vuzix Extension. Vuzix Extensions rely upon an applications ability to except external commands and therefore cannot be created for all applications.

Vuzix Extensions, published by Vuzix, are listed in the Monitor section of the VR Manager Software. See the VR Manager section of this documentation for instructions on enabling Vuzix Extensions and obtaining additional information on the support offered by each.

A listing of known Native Support and Vuzix Extension supported applications is available on the Vuzix website. ([www.vuzix.com/iwear/products\\_vr920\\_support.html](http://www.vuzix.com/iwear/products_vr920_support.html))

*Note: Due to the independent nature of applications with Native Support, there are many available that are not included in our published list.*

## VR Manager 3.0



VR Manager 3.0 is a software application provides support for Vuzix video eyewear using in VR applications on Windows based personal computer. It Currently supports the Vuzix iWear VR920 virtual reality system and the Wrap 920 when accompanied by a Wrap VGA Adapter.

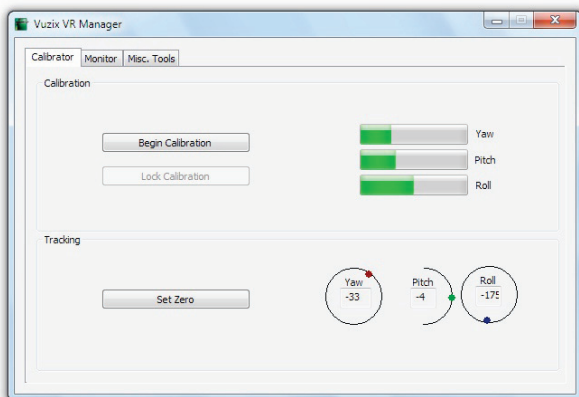
**Note:** *VR Manager 3.0 also supports 3D video display and head tracking for the Wrap 920 series of Vuzix video eyewear, when enabled with a Wrap VGA Adapter and Wrap Tracker 6TC.*

The VR Manager's interface is divided into three sections, accessed through the tabs along the top of its window:

**Calibrator:** Enables calibration of the tracker built into the iWear VR920 and the Wrap Tracker that plugs into Wrap video eyewear.

**Monitor:** Provides access to Vuzix Extension files that enable stereoscopic 3D video and/or head tracking in applications lacking native mode support for these features.

**Misc. Tools:** Technical data and resources designed to assist in troubleshooting stereoscopic and tracking problems.



## Calibrator

Vuzix trackers use multiple sensors for calculating movement and positioning, including magnetometers. Magnetometers utilize the earth's magnetic field and are influenced by nearby objects that influence the magnetic field such as items containing magnets, large metallic masses and certain electronic devices. To compensate for these influences the tracker must be calibrated. And, as magnetic influences fluctuate over time, it should be re-calibrated periodically or whenever its operating environment changes.

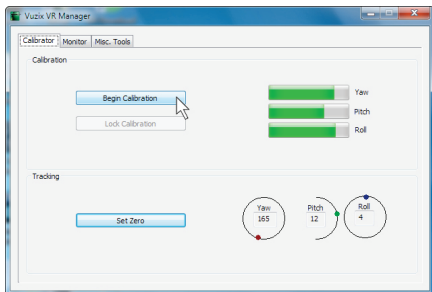
*Note: Certain metals and electronic devices create electromagnetic fields that will influence the Vuzix Tracker. Typical examples include, metal framed buildings and speakers, including a sub-woofer sitting under your desk.*

### Calibrating Your Tracker

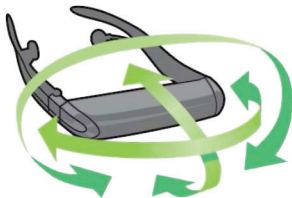
Start the VR Manager application with your eyewear and tracker connected to your computer.

*Note: For the best calibration results, the VR920's video display should be configured to display an image, 2D or 3D, during the calibration process. Its earphones should be anchored in the holder along the stems to maintain a consistent orientation as they too contain magnets.*

- 1. Open the VR Manager program and press the “Begin Calibration” button.**



Position your eyewear/tracker in a position similar to where it will be used, and move it fully through each of the yaw, pitch and roll axis.

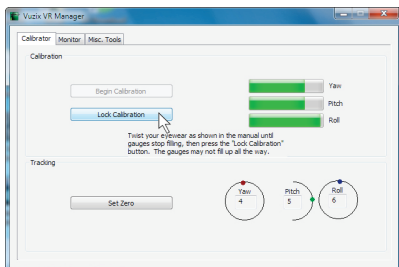


Yaw and roll support a full 360° of movement whereas pitch is only 180°.

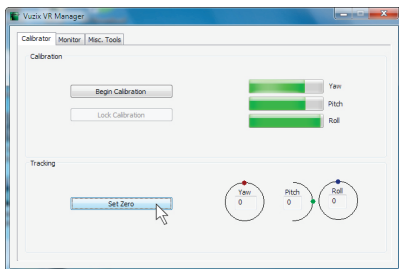
Continue moving the eyewear/tracker through its full range on movement, on each axis, until the progress bars stop progressing.

*Note: The calibration progress bars will not fill completely – this is normal.*

- 2. When the indicator bars stop moving, press the “Lock Calibration” button.**



- 3. Position the eyewear/tracker in the position where it will be used, facing your computer monitor or the desired 'straight ahead' position, and press the “Set Zero” button.**



The Set Zero button establishes the eyewear/tracker's home or centered position. As you move your head you will see the indicators and values in the Yaw, Pitch and Roll indicators change to reflect the tracker's current positioning.

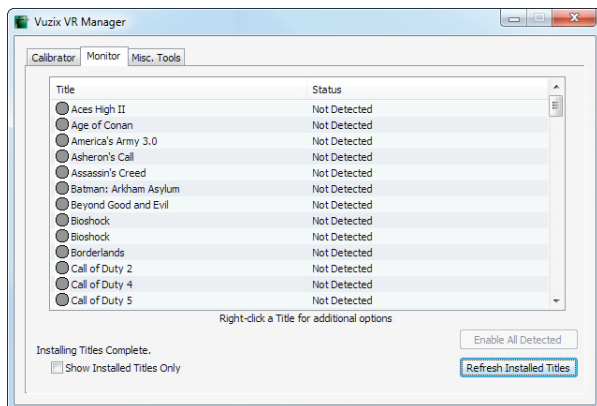
## Drift

Some degree of drift in the Yaw axis is normal. You can use the Set Zero button to re-center the tracker from time to time, without going through the complete calibration process.

## Monitor

Stereoscopic 3D video and head tracking require support within each application. This may be incorporated through Native support written directly into the application or through a Vuzix Extension.

Vuzix Extensions are managed through the Monitor section of the VR Manager. The Titles list shows all programs for which Vuzix Extensions are currently available, as well as their status.

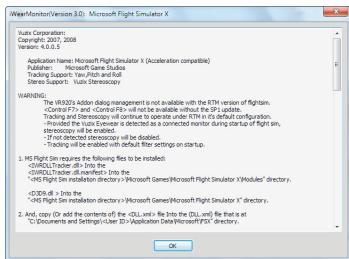


**Note:** *Software titles incorporating Native 3D video and/or head tracking support are not listed in the Monitor, as they do not require VR Manager Extension support. Only titles requiring Extensions are included in the Monitor listing.*



## Extension Notes

Not all Vuzix Extension includes both stereoscopic 3D video and tracking support plus some include support for additional features, such as Hot Keys for zooming in your view. An Extension Note describing its supported capabilities and manual installation instructions accompanies each Vuzix Extension.



To access the Vuzix Extension Notes:

- **Double-click on any Extension title, or**
- **Right-click on an Extension title and choose "View Extension Info" from the pop-up menu.**

## Enabling Extensions

Vuzix Extensions are automatically installed along with the VR Manager.

In order for an Extension to be used, the VR Manager must detect the appropriate file directories. Once an Extension has detected the correct directory, you must Enable those Extension you wish to use.



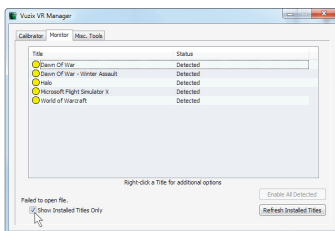
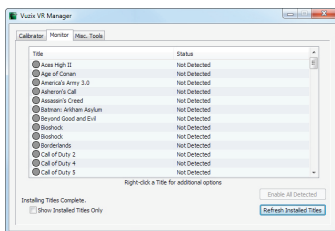
Extensions are color coded to assist you in easily determining their status. Those with a grey indicator are available but not yet associated with an application directory.



A yellow indicator identifies Extensions detected and associated with an installed application directory but not yet enabled.

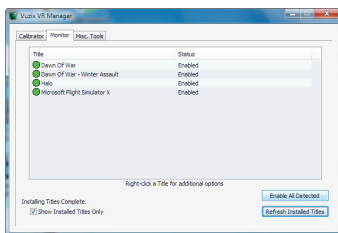


A green indicator identifies Extensions linked to applications and enabled, ready to use.



To better manage the long list of available Extensions, you can enable the “Show Installed Titles Only” option, in the lower-left corner of the window, to restrict the list to only titles found on your computer.

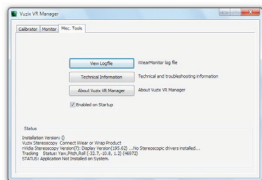
To Enable the Extensions you can right-click each detected Extension (yellow) and choose “Enable Title Support” from the menu options. You can also press the “Enable All Detected” button to enable all the detected (yellow) Extension in a single action.



When the VR Manager is installed it searches for supported applications. When you install additional titles onto your computer, press the “Refresh Installed Titles” button to have VR Manager search for and detect those applications. In some cases, such as when an application has been installed in a directory other than its default folder, VR Manager may be unable to find it. You can manually locate the file directory by right-clicking on the desired Extension and choosing “Browse for Directory” from the pop-up menu.

## Misc. Tools

This section of the VR Manager has been provided primarily to assist you and Vuzix Customer Service in quickly resolving technical problems.



**Test Stereoscopy:** This runs a simple 3D video display that enables you and Customer Service to determine if stereoscopic video support is enabled and functioning correctly. It displays a simple stereoscopic display.

**View Logfile:** The VR Manager creates a log file of recent activity. Customer Service may request you open the file and provide them with its contents.

**Technical Information:** This provides technical information that may assist you in troubleshooting problems encountered with your eyewear and extension supported titles.

**About Vuzix VR Manager:** Clicking on this button provides information on the current versions of supporting software and hardware firmware.

**Status:** Technical information on the current status of your Vuzix hardware, drivers and other pertinent technical information.

# Technical Support & Troubleshooting

## **No video display or a blank blue screen on the VR920:**

- Unplug and reconnect the USB cable.
- Recheck the above settings:
  - Clone/Mirror/Duplicate display
  - VR920 set as primary display
  - 640x480, 800x600, or 1024x768 resolution
  - 60 Hertz refresh rate

## **No 3D video:**

- Check for 3D video using the test application in the Misc. Tools section of the VR Manager.
- Update your graphics card drivers to the latest version.
- If you have another 3D video driver installed, disable it.

## **No Audio:**

- Check for audio in your VR920 earphones.
- Reset the desired speakers output in your Control Panel Sound settings.
- Reset the desired microphone input in your Control Panel Sound settings.

## **No 3D video or tracking in a specific application:**

- Verify the application has 3D video and/or tracking support in native mode or through a Vuzix Extension.
- If supported through a Vuzix Extension, enable the Extension through the Monitor section of the VR Manager software.

Additional troubleshooting tips and answers to Frequently Asked Questions are available on the Vuzix website ([www.vuzix.com](http://www.vuzix.com)).

## Contacting Customer Support

Vuzix Customer Support Services is available to assist you should you encounter difficulties with any Vuzix products.

Prior to contacting Customer Service, we request to read this manual and the available troubleshooting tips and FAQs. If you require Customer Support assistance, please provide the following information:

- Serial number, complete model name, and model number of your video eyewear.
- Make and model number of the audio video device being used.
- The name of any video content or software related to your support needs.
- Detailed explanation of the symptoms you are experiencing.

If you are calling by telephone, please do so while you have access to your computer, with your iWear VR920 connected and with VR Manager installed and open to the Misc. Tools screen.

## Vuzix Customer Service Directory

### ***Japan:***

Regional website:	<a href="http://www.vuzix.jp">www.vuzix.jp</a>
Email Customer Support:	<a href="mailto:japan@vuzix.com">japan@vuzix.com</a>
Customer Helpline:	03-6234-4170

### ***United Kingdom & Europe:***

Regional website:	<a href="http://www.vuzix.co.uk">www.vuzix.co.uk</a>
Email Customer Support:	<a href="mailto:vuzix@tmti.net">vuzix@tmti.net</a>
Customer Helpline:	+44(0) 844 477 2977
Customer service hours:	9 AM to 6 PM GMT, Monday - Saturday

### ***North America and other regions:***

Corporate website:	<a href="http://www.vuzix.com">www.vuzix.com</a>
Email Customer Support:	<a href="mailto:technical_support@vuzix.com">technical_support@vuzix.com</a>
Customer Helpline:	(800) 436-7838
Customer service hours:	9 AM to 6 PM EST, weekdays

## **FCC Compliance**

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: 1) Increase the separation between the equipment and receiver or 2) Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

## **Waste Electrical & Electronic Equipment (WEEE)**

1. The equipment that you bought has required the extraction and use of natural resources for its production. It may contain hazardous substances that could impact health and the environment.
2. In order to avoid the dissemination of those substances in our environment and to diminish the pressure on the natural resources, we encourage you to use the appropriate take-back systems. Those systems will reuse or recycle most of the materials of your end life equipment in a sound way.
3. The crossed-out wheeled bin symbol invites you to use those systems.
4. If you need more information on the collection, reuse and recycling systems, please contact your local or regional waste administration.
5. You can also contact us for more information on the environmental performances of our products.



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Made in USA

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